FOR THE BENEFIT OF THE CROWD.

Revolution in Art of War Indicated by Connecticut Campaign

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speedily verified by the reports of umpires, and wireless, 'phone and telegraph reports from the commanders in the field. It was even reported by an air scout, to the astonishment of Chief Umpire Bliss, that that general was in his automobile upon a certain road at a certain time. The scout had recognized the car while flying far overhead.

The aerial scouts were originally assigned to operate only on the Blue side. Then it was seen that the Red army had no chance, deprived of such a potent ally, and it was planned to divide the aeroplanes, assigning one to each side and keeping the third machine neutral. However, this arrangement was not carried out. The most spectacular feat of the airmen was Lieutenant Foulois's flight to the scene of the final battle at Newtown on Saturday, when, after aiding the Blues with a general reconnoissance, he was deserted by them on a hill and technically captured by the advancing Reds. On this, as on other occasions, the airmen landed upon and flew away from absolutely unknown ground.

The Burgess-Wright machine used by Lieutenant Foulois is equipped with a wireless outfit, which has sent messages for a distance of fifteen miles at tests made at College Park, Md. There is a small dynamo driven by the aero engine and a counterpoise of 300 feet of copper wire, which hangs beneath the planes. This machine is too light for a wireless operator and driver, but there are others which will carry two persons.

While sending wireless messages it has not yet been possible to receive them owing to the noise of the engine. The difficulty will be obviated by a muffler, which will also answer the objection that an aerial scout betrays his presence by the noise of his machine. The use of the most effective and complete muffler involves a maximum loss of energy of 15 per cent, which an up-to-date war plane can well afford to sustain.

The air scouts made their observations with the naked eye, although they carried field glasses. A special camera for military picture taking was tried out. There is a new rapid fire gun for use in the air, but the United States authorities are keeping its capabilities a secret. It is the only special weapon for air use employed by any nation. As to the possibility of combating the aeroplane from the ground, a half mile elevation and a speed of 50 to 75 miles an hour make the flyer an extremely difficult target. Moreover, no marksman can tell when or where to expect the aerial enemy. The chance of making a hit is almost infinitesimal, and though a dozen bullets could conceivably pierce a machine, not one would necessarily reach a vital spot. Two men are always carried in war, so that if one is wounded the other can guide the craft. It has happened in the Italian-Turkish campaign that one aviator was shot and his companion kept the machine going. The Italian flyers at Tripoli have "buffaloed" the Turks, not only by unveiling their movements, but by dropping bombs into their camps. What may be done against air scouts by the specially devised terrestrial quick firing guns remains to be demonstrated in actual war, but the airmen do not fear any gun operated from the earth.

On the basis of the work done by three machines in Connecticut, half a dozen aeroplanes would have covered the entire theatre of operations of the Russian-Japanese war in Manchuria, and within a couple of hours would have located every body of troops within it.

The use of the aeroplane means a revolution in fighting methods. This ultra new means cannot be grafted on an antiquated army system. There will be an enormous increase in the mobility and concentration of armed forces on the ground while desperate battles are being waged in the air. Infantry, artillery and cavalry will be eliminated, and in their stead fleets of armored automobiles mounted with machine guns will move swiftly by night from position to position. The first elimination will be of cavalry, the arm long considered as "the eyes of the army" and the indispensable "screen" for movements of infantry and artillery. The aero scout does in minutes what the cavalry require days to accomplish.

It is said that infantry are indispensable and superior to gun-equipped automobiles, because they can deploy in fields and go where wheeled vehicles cannot follow. The answer is that infantry travel on roads and are tied to roads practically the same as wheeled vehicles. While infantry are deploying, an armed automobile can destroy them or make a swift detour of any number of miles around their flank. A war automobile can travel any road practicable for men, mules and horses and at a speed five to fifteen times as great. It can travel twenty-four hours a day, compared with ten or twelve hours for men and animals.

In the theoretical problem aranged for the Connecticut war game three weeks were allowed for the concentration of a small army between Boston and New York. An actual enemy would not need more than three days to land a fleet of armored automobiles at some point on the New England coast, dash through any opposition, or circumvent it by a detour of a hundred miles to the north, reach the Croton water system and cut off the water supply of New York. To balk such an enemy, under the present army system, would require a cordon of troops guarding all roads for several hundred miles, and they could not be mobilized in two months. The only way of answering the attack would be to use the enemy's weapons and methods.

The view that terrestrial troops, opposed by aeroplanes, will only have to modify their tactics to the extent of marching at night and keeping hidden in wooded tracts by day is rebutted by the coming development of night flying machines. Areoplanes will be equipped with electric searchlights, with which the location and movement of the enemy will be picked out at night.

There will be deadly battles in the clouds between rival airmen attempting to destroy each other. The first engagement in a modern war will be between airmen, and the nation with the larger fleet of experienced aviators will have an immense advantage at the start, and will keep it. But the winner will strive to destroy his aerial enemy to the last man. If 999 aeroplanes out of 1,000 were destroyed the single machine left in the air could do more damage than a division of troops on the ground. It is like killing flies; one left means a myriad bred. Since total annihilation is impossible there must be a radical change in methods of terrestrial fighting.

In view of all these facts, it is interesting to know that the United States army has just eight aeroplanes, while France has at least 500, Germany about 200, and more building, England about the same as Germany and Russia about 100.

General Bliss, discussing the remarkable achievements of the air scouts with The Tribune writer, foresaw conflicts in the clouds, but made the rather unusual deduction that terrestrial tactics would be revolutionized by the aeroplanes backward rather than forward. That is to say, the unveiling of tricks and stratagems by an overhead scout would compel rival generals to discard all attempts to outwit an enemy, armies would meet each other as in primitive times, on a basis of sheer brute strength, and the bigger force would win.

Colonel Baron de Bode, the Russian attaché at the manœuvres, said that he was impressed by the growing importance in warfare of aeroplane and wireless, and the modifications their use suggests in old established methods. The baron was interested in the kitchen wagon of the 71st New York Regiment, which is like the Russian soup wagon, in which food is cooked while on the march. He thought the auto trains had shown their use, and that a general improvement was shown in the manœuvres over the Massachusetts campaign of two years ago, which he witnessed.

Lieutenant Colonel M. A. Gage, the British attaché, thought that the use of aeroplanes may bring about night marching of troops. Battles in the air are coming. We do not know yet by practical test what anti-aeroplane guns may accomplish. There will be greater mobility of troops, said Colonel Gage, but motor vehicles demand good roads and strong bridges. The heavy military motors would go through small wooden bridges over brooks and creeks. It was odd that America, where the Wright brothers originated the aeroplanes, should have so few machines in military use. Colonel Gage thought the reason must be that this country has no imminent peril of war, such as faces European countries. The English observer made flattering remarks on the intelligence and physique of our militia. He said that the instructional period was valuable for troops and regimental officers, a feature not found in Continental manœuvres, where the general officers get the chief benefit.

Lieutenant Colonel A. F. Townsend, chief quartermaster of the New York militia, said that the troops of this state used 15 motor trucks, 300 wagons and 2,000 horses and mules. It was planned to have one motor truck to carry supplies and equipment for each regiment, but the 23d Regiment got four trucks, owing to a failure to secure horses. The motor trucks were miscellaneous commercial vehicles hired for the occasion, and many of them were manifestly not adapted for military purposes. They varied from two to five tons' load capacity, or four to nine tons including weight of vehicle. The best army truck, which will not smash bridges, is of one and a half-ton capacity, the same as the four-mule army wagon. This machine can travel ten miles an hour or fifty to sixty miles a day, which is double mule capacity. It is feasible to carry along a bridge repair kit, consisting of carpenter tools and a few heavy planks, whereby bridges over brooks and culverts may be speedily strengthened or mended.

Besides Senator Griffin and Assemblyman Cuvillier, a number of other members of the committees on Military Affairs of the New York Legislature who attended the manœuvres, expressed themselves as strongly in favor of up-to-date tools and methods of war. The other legislators were Senators Rose, Foley and Wainwright and Assemblymen Brooks, Bell, Cross, Kennedy, McGregor, Robinson and Ruland.

Major General O'Ryan, commanding officer of the New York militia, who had the fortune to outrank all regular and other generals in the field, said that one of the most saisfactory things about the manœuvres was the accurate and speedy transportation of the New York City troops to the theatre of operations. The credit for this movement belonged to the chief quartermaster, Colonel Townsend, as well as to the railroad company. That was the only staff departmental work that New York undertook. There had been complaints of commissary arrangements. Some delays were caused by the failure of regimental trains to connect up with the commissary local base, and in some instances this was unavoidable. There was trouble with civilian employes—for example, a strike of teamsters with the field artillery in a provisional regiment. The only kind of men to have around a camp for important work are soldiers, who can't strike, declared General O'Ryan. The general thought there was a vast improvement in the care of camp sites, cleanliness of kitchens, sanitary features and personal hygiene. The dicipline of the men was of a high order, their conduct on march quiet and soldierly, their deportment in presence of civilians, and particularly women, noticeably respectful and considerate. The bivouacs were quiet and orderly. Our troops also showed their sand, that indispensable characteristic of a soldier. After a long hike in heavy clouds of dust, with little or no water, the men would pull themselves together and enter a new camp site in soldierly style.

The importance of the part played in the operations by the military aviators was emphasized by General O'Ryan, who saw that greater mobility and night marching of troops would soon be demanded. The damage that the aviator can do by dropping explosives is exaggerated. As a scout he is invaluable. His services in obviating what is called a reconnoissance in force means a vast saving of time and lives.

Adjutant General Verbeck agreed that it had been demonstrated that radical changes were impending in the art of war. While praising the conduct and appearance of the New York troops, he was impressed with the behavior and high class material of other militia, especially that of Connecticut, Maine and Vermont. On the first days in camp, at the end of a hike, he saw that the New Yorkers attended first to their feet and afterward cleaned their guns. But later they reversed this procedure and gave their weapons the immediate and tender care which a true soldier bestows on his arms. It was a mistake to delegate the cleaning of rifles to armorers at home, since in the field the men had to learn this elementary duty anew. The cheerful demeanor of the troops amid all difficulties was remarkable. General Verbeck came across an outpost beside a farmhouse and asked how the men were faring. They replied very well, except that they had no water. "Why, there's a well!" exclaimed the general, pointing. "Yes, but we were told not to go upon any private property," replied the troopers. General Verbeck smilingly gave them permission to ask the folks at the farmhouse for a drink of water. This illustrated the scrupulous obedience and good conduct of the soldiers.

While riding in an automobile with Governor Dix, General Verbeck stopped at a farmhouse to ask an elderly woman which way a Red detachment had gone. The woman gave an obviously wrong direction. The motor car carried a blue pennant, and she, evidently thought that the occupants were enemies of her friends the Reds. When reproached for her misinformation and told that Governor Dix of the State of New York was in the car the woman laughed and replied: "That's what they all say."

The lay observer of the week's operations did not have to look far or hear much to learn that there was serious inefficiency in feeding and caring for the troops in the field. In the first place, camp sites were improperly chosen. This fault cannot be excused on the ground of immediate need, for every camp site was selected long in advance of the manœuvres—a detail that in itself made the war game as a game rather ridiculous. Many of the Reds had to pitch their dog tents on newly ploughed ground at Orange, and the entire division camped for two days on Means Brook, a foul little pasture dribble, which was the source of all water for drinking, washing, cooking and watering the animals. Many men performed their ablutions with a jack knife, scraping away the excess of dust and grime from their anatomies. There were but two or three wells in the vicinity, and the water in them did not go far.

Those soldiers who had taken the anti-typhoid serum congratulated themselves, for not only was the water of Means Brook suspicious looking, but it was inadequately guarded above the drinking point. Men who were feverish with thirst and dust choked lungs could scarcely be blamed for violating rules, which nevertheless should be sternly enforced. The water problem could have been easily solved by water carts of the type used by the English in the campaign against the Boers in South Africa, or the street sprinkling tank carts used in the Massachusetts manœuvres two years ago.

At more than one camp on the above mentioned brook space was lacking, so that the tents of officers and men were pitched within ten feet of the latrines, a violation of sanitary first principles. This was the experience of members of the 7th, 12th, 69th and 71st New York and the Maine and Vermont regiments, among others. Flies abounded in tents and around kitchens, though the Connecticut hills are notably free from flies. The food was generally good, but it was served only twice a day to men who worked hard, some of them on the go from 3:30 o'clock in the morning until late in the afternoon. If it was possible for hucksters to travel with the troops and sell them food in the middle of the day it should have been possible for the commissary department to provide some sort of midday meal. Finally, on Friday night when it was chilly enough to wear overcoats, the shirtsleeved men of General Dyer's brigade bivouacked on the hills in the scanty protection of ponchos and dog tents. Their blankets and coats were somewhere on the road with the wagon train. Some of the men burned the soles of their shoes sleeping around campfires trying to keep warm. A few others, to the same end, dosed themselves with spirits. None could sleep with the least comfort. All this happened at a war game in a time of peace.

It is pleasanter in a way to contemplate the model headquarters camp at Paradise Green in Stratford, a few miles from Bridgeport. Here were Chief Umpire Bliss and his staff of regular army assistants, the aviation squadron, Company A of the signal corps, with the wireless outfit, Captain Willing and his men of the engineer corps, part of the 10th Cavalry, the military attachés, the headquarters officers of the New York militia and the visiting members of the New York Legislature. It was a spick-and-span camp, spacious, dry, on a little plateau bordered with luxuriant corn fields and groves of trees. The engineers rigged a shower bath below a dam, confining a small pond, and if you did not care for that luxury after a day's dusty automobile riding in the field, you could tub yourself in front of your tent like Richard Harding Davis or take a sponge bath in the style of Lieutenant Colonel Cornelius Vanderbilt. A colored barber of the 10th Cavalry was ready to scrape your face if you did not have a "man" to attend to that operation. There was excellent food cooked in screened kitchens and served in screened dining tents. Sanitary scrupulosity was carried to such a fine point that crude carbolic and a tar by-product were spread on the mule and horse picket lines, so as to squelch the last disease-carrying fly. There was mosquito netting in many of the tents, together with cots, blankets, canvas arm chair, a strip of matting, lantern, bucket, wash basin. Under these conditions war was a delightful exercise. In fact, Mr. Davis, the beau ideal of war correspondents, who brought his rubber tub with him and a host of reminiscences from Cuba to Manchuria, thought that some of the luxuries were excessive, and indignantly repudiated such items as a cot mattress and the attentions of a body servant.

The war correspondents who fared well and had a chance to get information did so chiefly through the good graces of Major General O'Ryan and Adjutant General Verbeck of the New York militia. The regular army authorities offered neither tent room nor adequate facilities for obtaining the news. It was apologetically stated in their behalf that an appropriation was lacking to look after the press. But it would have required no appropriation to have assigned a few tents to correspondents, to have given them transportation with the umpires and to have organized a first class bureau for the dissemination of news. In peace, as in war, the wise general or War Department knows the value of publicity.

The great attraction at Paradise Green was the aeroplanes and their morning and evening flights. There were two Curtiss machines and one Burgess-Wright machine, all two-passenger biplanes. The Burgess-Wright, driven by Lieutenant Foulois, was equipped for wireless. The Curtiss machine, operated by Beckwith Havens, did not belong to the army. A hydro-aeroplane, called a Burgess tractor, started for the field of war from Marblehead, Mass., and broke down on the way. Lieutenants Arnold and Kirtland were aboard. The complete outfit of this seaair ship weighed a ton, including cable and anchor.

Next to the aeroplanes, the wireless outfit of Company A of the signal corps, from Omaha, was the centre of interest. This apparatus was imported from Germany for use in the United States army not many months ago. There is a jointed mast, with black rubber-coated tentacles spreading from the top to the ground, and a mule-drawn wagon, which separates in two parts, the rear end containing a gasolene engine dynamo and the front end the delicate machinery for receiving and sending messages. A distance of 200 miles or so has been covered by this travelling outfit. For smaller field use receiving instruments may be carried by a single man, and there is a complete sending and receiving outfit for a distance of a dozen miles for which electrical power is generated by a hand-turned motor. Besides the use of big and small wireless outfits in the manœuvres, telephone and telegraph wires were laid in the field for distances of many miles.

The map making of the engineers under Captain Willing is a story in itself. Every day the manœuvres and positions of all troops, as learned from scouts and umpires, were plotted on large scale maps, of which many copies were made by a mechanical process. It was interesting also to see the solitary map maker in the field, who made an up-to-date version of a road shown on an old government map. Distance was measured by counting steps, and direction was obtained by a compass fixed in a board beside a roll of thin paper. The road was pencilled on the unwinding roll.

As for the general strategy of the war game, every move was planned in advance by headquarters up to the last two days, and the opposing generals had little chance to show what they could do. They could not help doing what they did at the finish. The movement of the Reds under Brigadier General F. A. Smith was a semicircular sweep to the northwest, crossing the Housatonic River and threatening the base of the Blues at Danbury. The Blues, under Brigadier General A. L. Mills, protecting themselves, retreated on a similar sweep to the southward and by a flanking march concentrated north at Newtown in front of their base to meet the enemy in a last engagement. If General Smith had dared the swampy ground due west of his position at Monroe on Thursday, he might have cut his opponent in two. Neither general seemed very anxious to hurt the other. It was said that General Mills was the more conservative in his movements.

In the grand finale on Saturday, which outrivalled any war game ever seen in this country, the entire horse, foot and artillery of both armies clashed in a magnificent natural amphitheatre. The booming of cannon was heard twenty-five miles away. The Blue right was driven back by the Reds and the Red right was flanked by the Blues. After five hours' fighting the Blue battery on the crest of Hill 698 was charged and taken by the Reds, chiefly the 3d Battalion of the 7th New York. Just a few minutes later, at 12 o'clock, Chief Umpire Bliss had the recall sounded. The battle was over. Unofficially, the opinion was expressed that General Smith had won and that his men, after refreshing themselves with the accumulated rations at the Danbury base of the Blues, would march on to humble this proud and arrogant city. Instead of that, all hands joyfully fraternized and prepared to return to home and mother.